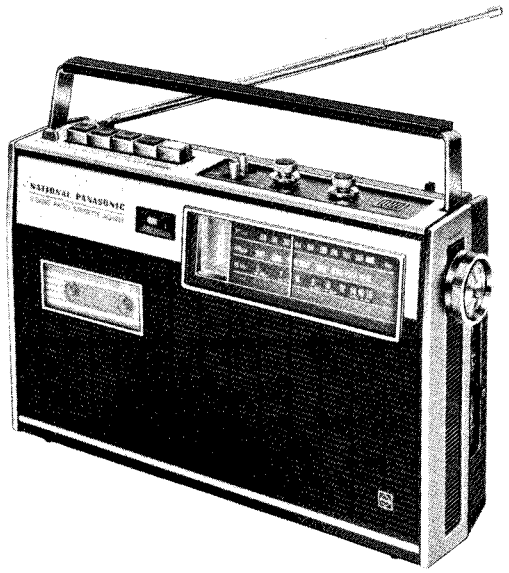
# Service Manual

NATIONAL
TAPE RECORDER
PANASONIC

## CASSETTE TAPE RECORDER WITH FM/MW/SW RADIO



**RQ-237S MECHANISM SERIES**

## MODEL RQ-447FHS MODEL RQ-447FJS

### SPECIFICATIONS

| | |
|---|---|
| Power Source: | AC: 90~109, 110~125, 200~219, 220~250 volts: 50/60 Hz<br>DC: 9 volts (six "C" type batteries)<br>Car/boat battery (using optional car/boat adaptor RP-916) |
| Power Consumption: | 6 W |
| Motor: | Mechanical governor motor |
| Transistors: | 2SC921(1), 2SC920(4), 2SB324(1) |
| IC: | M5115P(1) |
| Diodes & Rectifier: | OA90(5) 1S351(1) 2OA90(2)<br>OA90ZA(1) 1S1211(2)<br>EYV320DIR2J3(1) 10DC1(1) |
| Maximum Output: | 2 W (RMS) |
| Track System: | 2 track monaural |
| Recording System: | AC bias 35 kHz |
| Erasing System: | AC erase |
| Tape Speed: | 1-7/8 ips. |
| Fast Forward Time: | Approx. 90 seconds with C-60 cassette |
| Rewind Time: | Approx. 90 seconds with C-60 cassette |
| Frequency Response: | 50~10,000 Hz |
| Inputs: | "MIC" −74 dB 3 kΩ<br>"AUX IN" −30 dB 100 kΩ |
| Output: | "EXT SP" 8Ω |
| Speaker: | 4-3/4" dynamic speaker |
| Dimensions: | 8-1/8"(H) × 12-1/8"(W) × 3-1/4"(D) |
| Weight: | 7 lbs |

**RADIO SECTION**

| | |
|---|---|
| FJS | |
| Frequency Range: | FM: 87.5~108 MHz<br>MW: 525~1,605 kHz<br>SW: 5.9~18 MHz |
| FHS | |
| Frequency Range: | FM: 87.5~108 MHz<br>MW: 525~1,605 kHz<br>SW: 3.9~12 MHz |
| Sensitivity: | FM: 2μV/50 mW<br>MW: 70μV/m/50 mW<br>SW: 10μV/50 mW |

These specifications are subject to change in order to accommodate improvements in design.

MATSUSHITA ELECTRIC
MATSUSHITA ELECTRIC TRADING CO., LTD.
P. O. Box 288 Central, Osaka, Japan

ORDER NO. ARD-7203109

# LOCATION OF PARTS

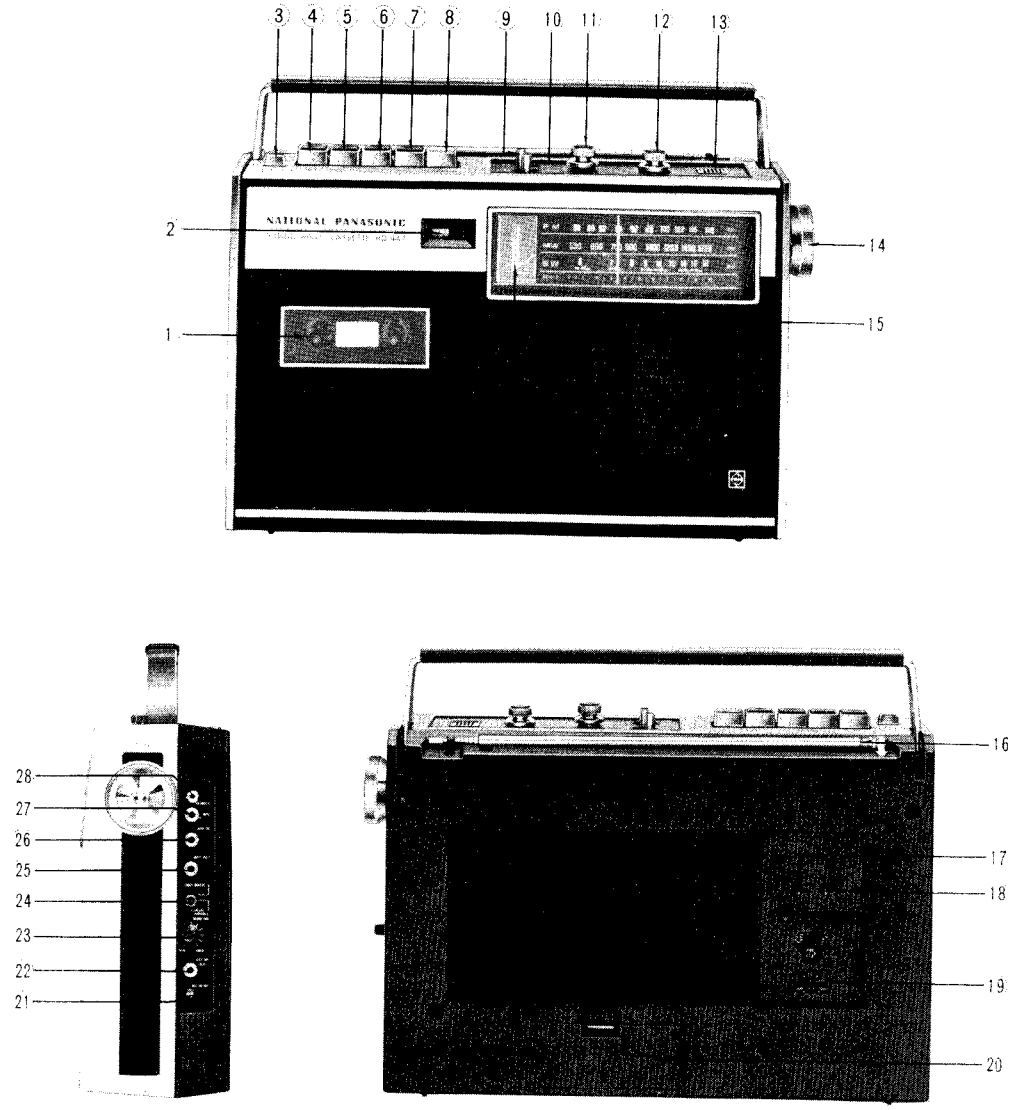



**Fig. 1**

① Cassette case
② Tape counter
③ Eject button
④ Stop button
⑤ Playback button
⑥ Fast forward button
⑦ Rewind button
⑧ Record button
⑨ Band select knob
⑩ Radio/tape select knob
⑪ Tone control
⑫ Volume control
⑬ Built-in microphone
⑭ Tuning knob
⑮ VU meter
⑯ Rod Antenna
⑰ External jack
⑱ Earth jack
⑲ AC socket
⑳ Battery compartment
㉑ DC IN
㉒ External speaker jack
㉓ Monitor level control
㉔ Easy-matic/manual selector
㉕ MPX OUT jack
㉖ Auxiliary input jack
㉗ External microphone jack
㉘ Remote jack

# STANDARD VALUE TO TEST

| ITEM | VALUE | PARTS TO BE ADJUSTED | REMARKS |
|---|---|---|---|
| Recording bias current | 0.45 mA | VR3 | Set the volume control to minimum. |
| Input level | MIC −74±4 dB<br>AUX −30±4 dB | —— | To obtain 50±10μA of recording current through the recording head. Set the volume control to maximum. |
| Bias oscillation frequency | 35±5 kHz | —— | —— |
| Erase current | 50±3 mA | —— | —— |
| Takeup tension | 45±15 gr-cm | —— | —— |
| Pressure of pressure roller | 400±50 gr | Pressure roller lever spring. | —— |

# ALIGNMENT INSTRUCTIONS OF RADIO

## THREADING DIAL CORD

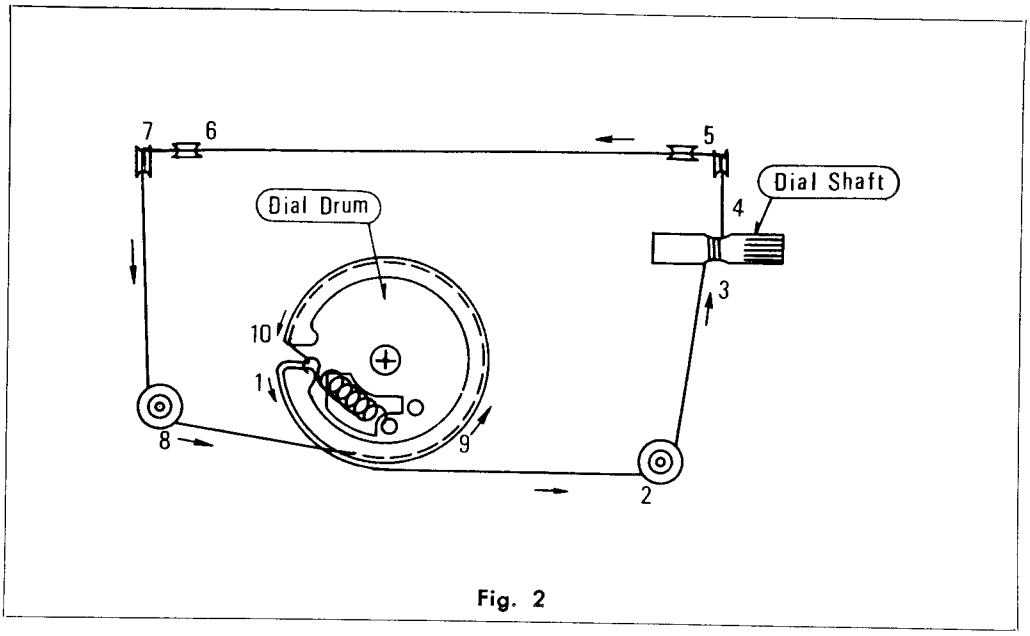



Fig. 2

## MW IF & RF ALIGNMENT

Output of signal generator should be no higher than necessary to obtain an output reading.
Set volume control to Minimum. Set tone control to treble.
Set power source voltage to DC 9 volts. Set band selector switch to AM.

| | SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | RADIO DIAL SETTING | INDICATOR | ADJUSTMENT | REMARKS |
|---|---|---|---|---|---|---|
| 1 | Fashion loop of several turns of wire and radiate signal into loop of receiver. | 455 kHz (400 Hz Mod.) | Point of non-interference. (on/about 600 kHz) | Output meter across EXT SP jack. | T3 (1st IFT)<br>T5 (2nd IFT)<br>T8 (3rd IFT) | Adjust for maximum output. |
| 2 | Fashion loop of several turns of wire and radiate signal into loop of receiver. | 550 kHz (400 Hz Mod.) | 550 kHz | Output meter across EXT SP jack. | L10 (OSC coil)<br>L7 (ANT coil) | Adjust for maximum output by sliding coil (L7) along ferrite core. |
| 3 | Fashion loop of several turns of wire and radiate signal into loop of receiver. | 1500 kHz (400 Hz Mod.) | 1500 kHz | Output meter across EXT SP jack. | C30 (OSC trimmer)<br>C10 (ANT trimmer) | Adjust for maximum output. Repeat steps (2) and (3). |

**Note:** 1. Cement antenna bobbin with wax after completing alignment.
2. Make certain that speaker system or dummy resistor (8Ω) is connected to the EXT SP jack when aligning.

## SW RF ALIGNMENT FOR RQ-447FHS

Output of signal generator should be no higher than necessary to obtain an output reading.
Set volume control to maximum.
Set tone control to high.
Set band selector switch to SW.
Set power source voltage to DC 9 volts.

| SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | RADIO DIAL SETTING | INDICATOR | ADJUST | REMARKS |
|---|---|---|---|---|---|
| Fashion loop of several turns of wire and radiate signal into loop of receiver. | 4 MHz 30% 400 Hz Mod. | 4 MHz | Output meter across EXT SP jack. | L11 (OSC coil) | Adjust for maximum output. |
| Fashion loop of several turns of wire and radiate signal into loop of receiver. | 12 MHz 30% 400 Hz Mod. | 12 MHz | Tuning indicator | C32 (OSC trimmer) | Adjust for maximum output. |
| Fashion loop of several turns of wire and radiate signal into loop of receiver. | 12 MHz 30% 400 Hz Mod. | 12 MHz | Tuning indicator | L8 (ANT coil) | Adjust for maximum output. |

**Note:** Cement antenna bobbin with wax after completing alignment.

## SW RF ALIGNMENT FOR RQ-447FJS

Output of signal generator should be no higher than necessary to obtain an output reading.
Set volume control to maximum.
Set tone control to high.
Set band selector switch to SW.
Set power source voltage to DC 9 volts.

| SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | RADIO DIAL SETTING | INDICATOR | ADJUST | REMARKS |
|---|---|---|---|---|---|
| Fashion loop of several turns of wire and radiate signal into loop of receiver. | 6 MHz 30% 400 Hz Mod. | 6 MHz | Output meter across EXT SP jack. | L11 (OSC coil) | Adjust for maximum output. |
| Fashion loop of several turns of wire and radiate signal into loop of receiver. | 18 MHz 30% 400 Hz Mod. | 18 MHz | Output meter across EXT SP jack. | C32 (OSC trimmer) | Adjust for maximum output. |
| Fashion loop of several turns of wire and radiate signal into loop of receiver. | 18 MHz 30% 400 Hz Mod. | 18 MHz | Output meter across EXT SP jack. | L8 (ANT coil) | Adjust for maximum output. |

**Note:** Cement antenna bobbin with wax after completing alignment.

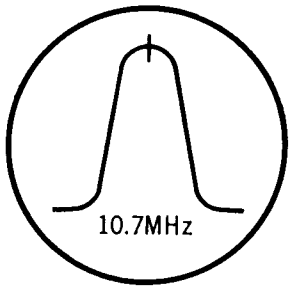



Fig. 3

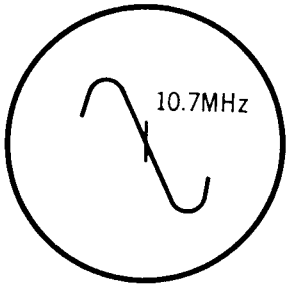



Fig. 4

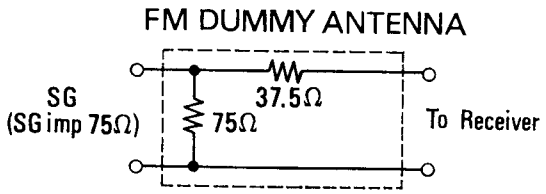



Fig. 5

## FM IF & DETECTOR ALIGNMENT WITH OSCILLOSCOPE

**EQUIPMENT REQUIRED**

Signal generator that provides 10.7 MHz marker.
Sweep generator that provides 10.7 MHz center frequency and 400 kHz sweep width.

**OSCILLOSCOPE**

Set sweep selector of oscilloscope to "EXTERNAL SWEEP" Apply 60 Hz sweep signal from sweep generator to horizontal input terminal of oscilloscope.
Set band selector switch to FM.
Set volume control to minimum.
Set tone control to treble.
Set AFC switch to "OFF".
Maintain line voltage at DC 9 volts.

**Note:** Unsolder lead between test point TP2 and Point Ⓐ before alignment and resolder it after alignment.

| | SWEEP GENERATOR COUPLING | SIGNAL GENERATOR COUPLING | RADIO DIAL SETTING | INDICATOR | ADJUSTMENT | REMARKS |
|---|---|---|---|---|---|---|
| 1 | High side thru. .001 μF to point TP1. Common to chassis. | High side thru. .001 μF to point TP1. Common to chassis. | Point of non-interference (on/about 90 MHz). | Connect vert. amp. of scope to point TP2. Common to chassis. | T1 (FM 1st IFT) T2 (FM 2nd IFT) T4 (FM 3rd IFT) T6 (FM 4th IFT) | Adjust for maximum amplitude and proper linearity between ±100 kHz markers. (Refer to Fig. 3) |
| 2 | High side thru. .001 μF to point TP1. Common to chassis. | High side thru. .001 μF to point TP1. Common to chassis. | Point of non-interference (on/about 90 MHz). | Connect vert. amp. of scope to point TP3. Common to chassis. | T7 (FM 5th IFT) | Adjust T7 so that 10.7 MHz marker is at the center. (Refer to Fig. 4) |

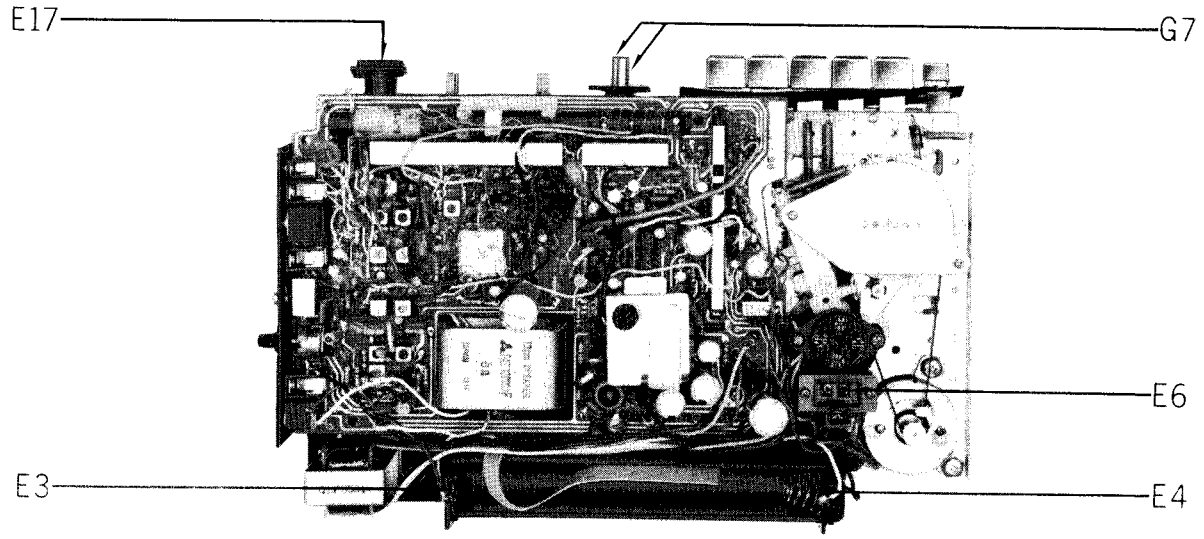
## FM RF ALIGNMENT

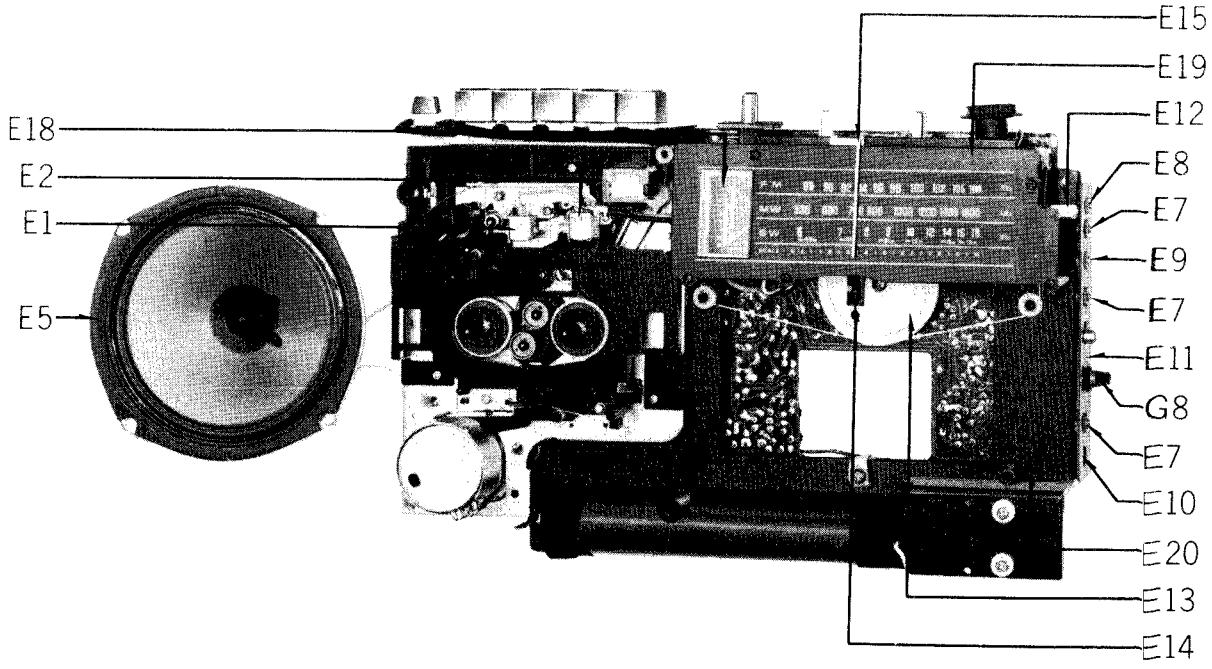
Output of signal generator should be no higher than necessary to obtain an output reading.
Set volume control to minimum.
Set band selector switch to FM.
Set tone control to center.
Set AFC switch to "OFF".
Set power source voltage to DC 9 volts.

| | SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | RADIO DIAL SETTING | INDICATOR | ADJUSTMENT | REMARKS |
|---|---|---|---|---|---|---|
| 3 | Connect to EXT FM antenna terminal through FM dummy antenna. Common to chassis. (Refer to fig. 5) | 90 MHz (400 Hz Mod.) | 90 MHz | Output meter across EXT SP jack. | L6 (FM OSC coil) L4 (FM collector coil) | Adjust for maximum output. |
| 4 | Connect to EXT FM antenna terminal through FM dummy antenna. Common to chassis. (Refer to fig. 5) | 106 MHz (400 Hz Mod.) | 106 MHz | Output meter across EXT SP jack. | C36 (FM OSC trimmer) C16 (FM collector trimmer) | Adjust for maximum output. Repeat steps (3) and (4). |

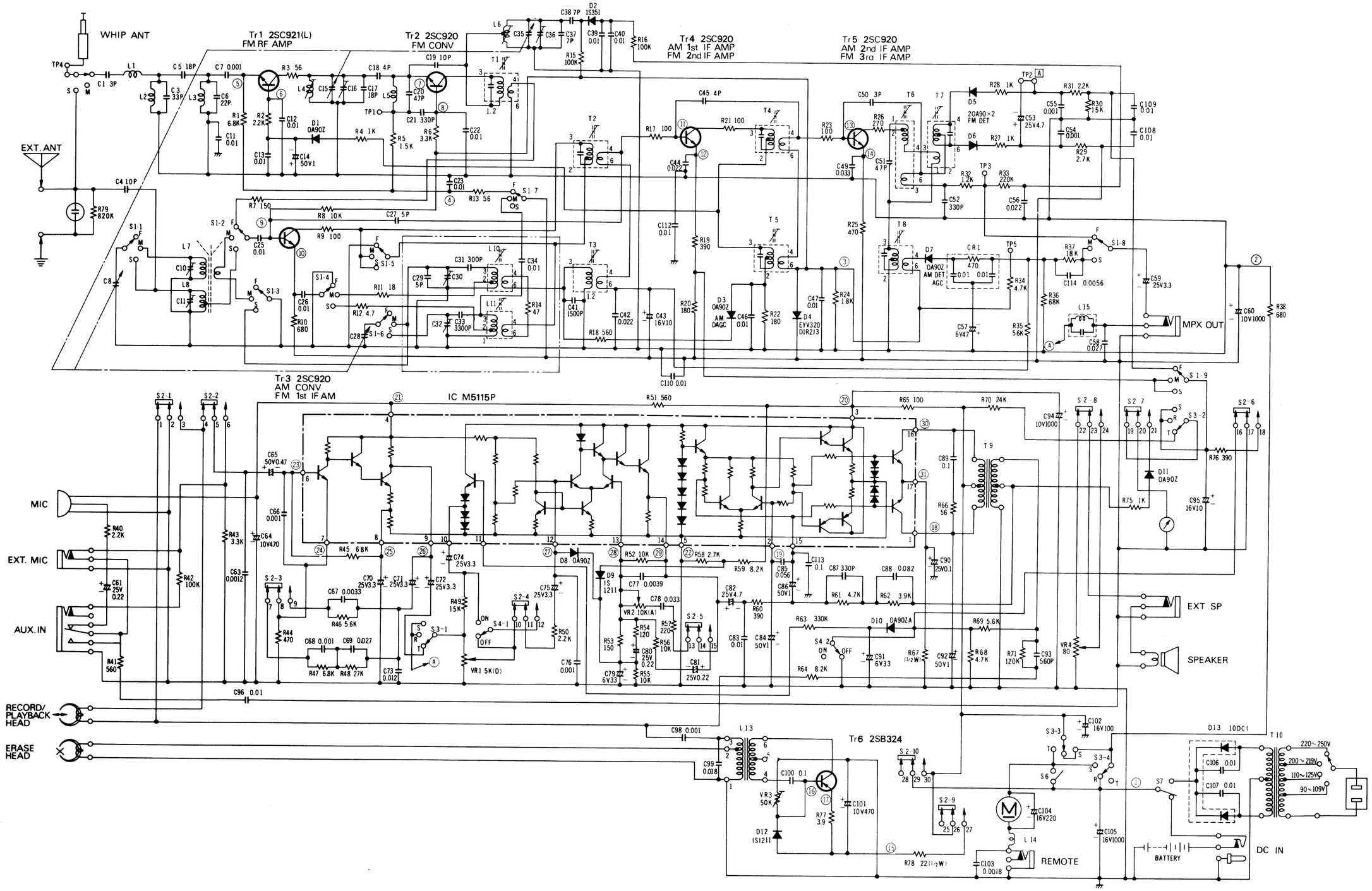
**Note:** Three output responses will be present, proper tuning is the center frequency.

# ELECTRICAL PARTS LOCATION

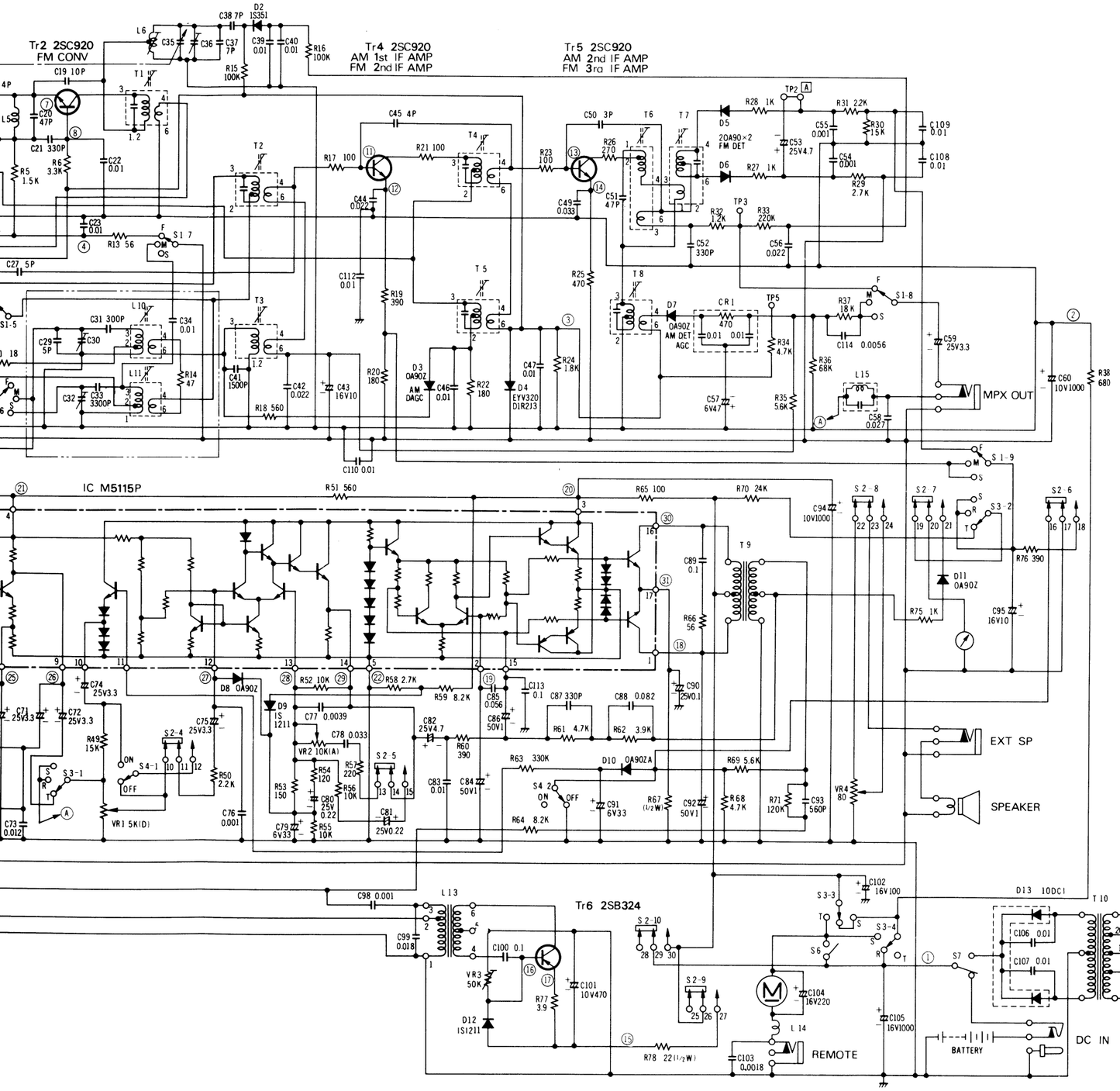


# SCHEMATIC DIAGRAM MODEL RQ-447FHS(FJS)



# MODEL RQ-447FHS (FJS)



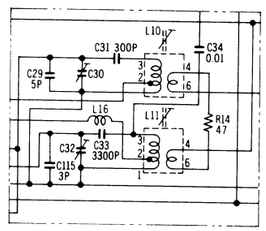

**STANDARD VOLTAGE CHART**

| Check Point | Record-ing | Playback | FM | AM | Check Point | Record-ing | Playback | FM | AM |
|---|---|---|---|---|---|---|---|---|---|
| 1 | +9V | +9V | +9V | +9V | 17 | +7.8V | | | |
| 2 | | | +4.8V | +5.1V | 18 | | +9V | | |
| 3 | | | +1.3V | +1.3V | 19 | | +2.1V | | |
| 4 | | | +0.06V | — | 20 | | +7.6V | | |
| 5 | | | +3.8V | — | 21 | | +6.5V | | |
| 6 | | | +4.5V | — | 22 | | 0V | | |
| 7 | | | +0.76V | — | 23 | | +0.71V | | |
| 8 | | | +1.3V | — | 24 | | +0.06V | | |
| 9 | | | +1.2V | +1.2V | 25 | | +0.78V | | |
| 10 | | | +0.51V | +0.63V | 26 | | +4.5V | | |
| 11 | | | +1.3V | +1.3V | 27 | | +2.1V | | |
| 12 | | | +0.6V | +0.6V | 28 | | +1.9V | | |
| 13 | | | +1.3V | +1.3V | 29 | | +3.7V | | |
| 14 | | | +0.6V | +0.6V | 30 | | +2.1V | | |
| 15 | +8.0V | | | | 31 | | +9V | | |
| 16 | +7.8V | | | | | | | | |

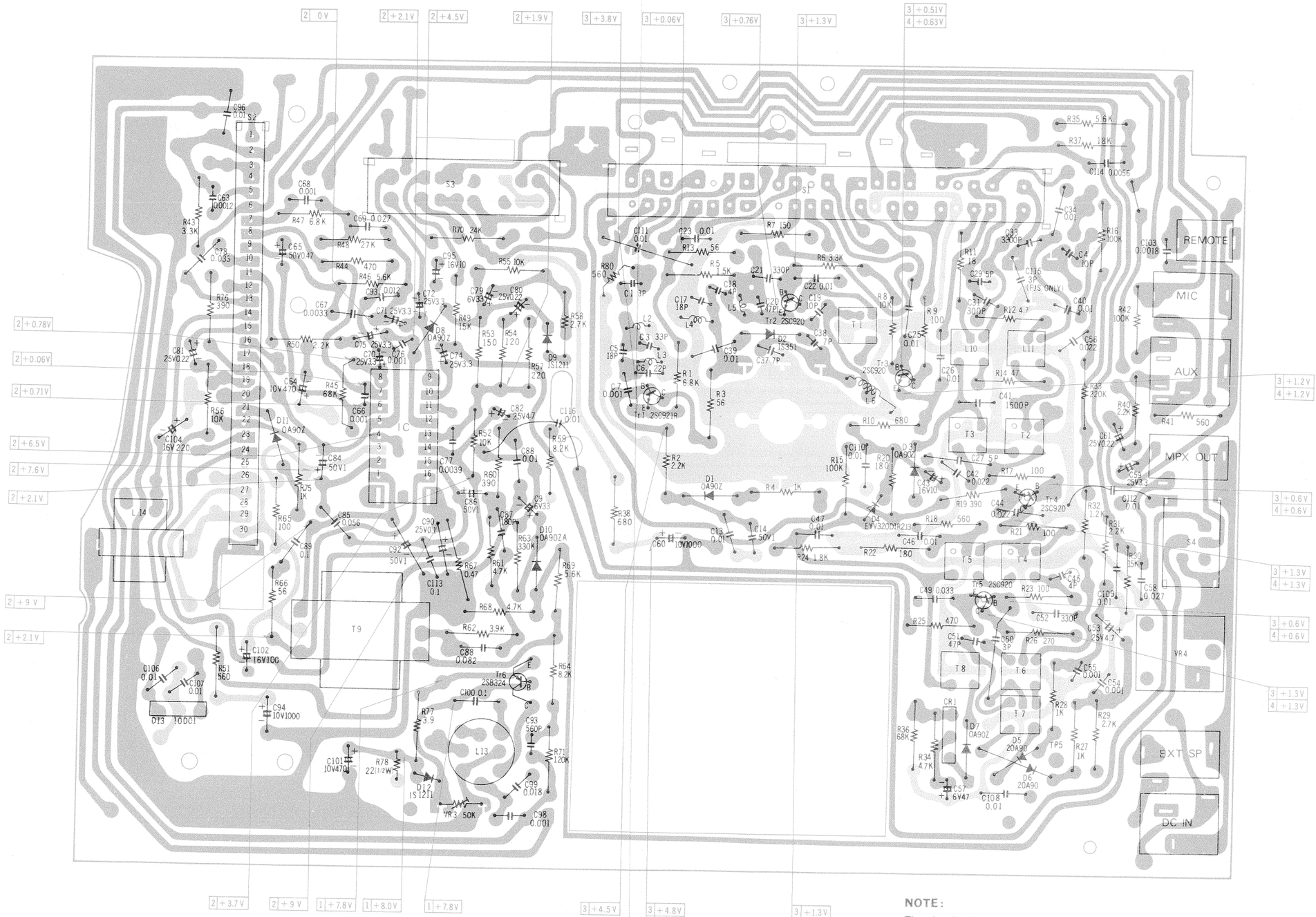
**NOTE:** All measurements are under no signal conditions with volume at minimum position. Use VTVM for voltage measurements.

**NOTE:**

1. S1-1～S1-9 ..... Band select switch (shown in FM position).
2. S2-1～S2-11 ... Record playback select switch (shown in PLAYBACK position).
3. S3-1～S3-4 ..... Function switch (shown in TAPE position).
4. S4-1, S4-2 ..... Automatic gain control switch (shown in OFF position).
5. S6 ..... Power ON OFF switch.
6. S7 ..... AC DC select switch with AC socket.
7. S8 ..... AC voltage select switch.
8. VR1 ..... Volume control.
9. VR2 ..... Tone control.
10. VR3 ..... Recording bias current adjustment VR.
11. VR4 ..... Monitor level control.
12. Resistors are ohms (Ω), 1/4 watt unless specified otherwise.
    K 1,000Ω
13. Capacitors are microfarad (μF) unless specified otherwise.
    P Pico-farad.
14. Encircled numbers ( ) show the checkpoint for voltage.
    The values are marked in the standard voltage chart.

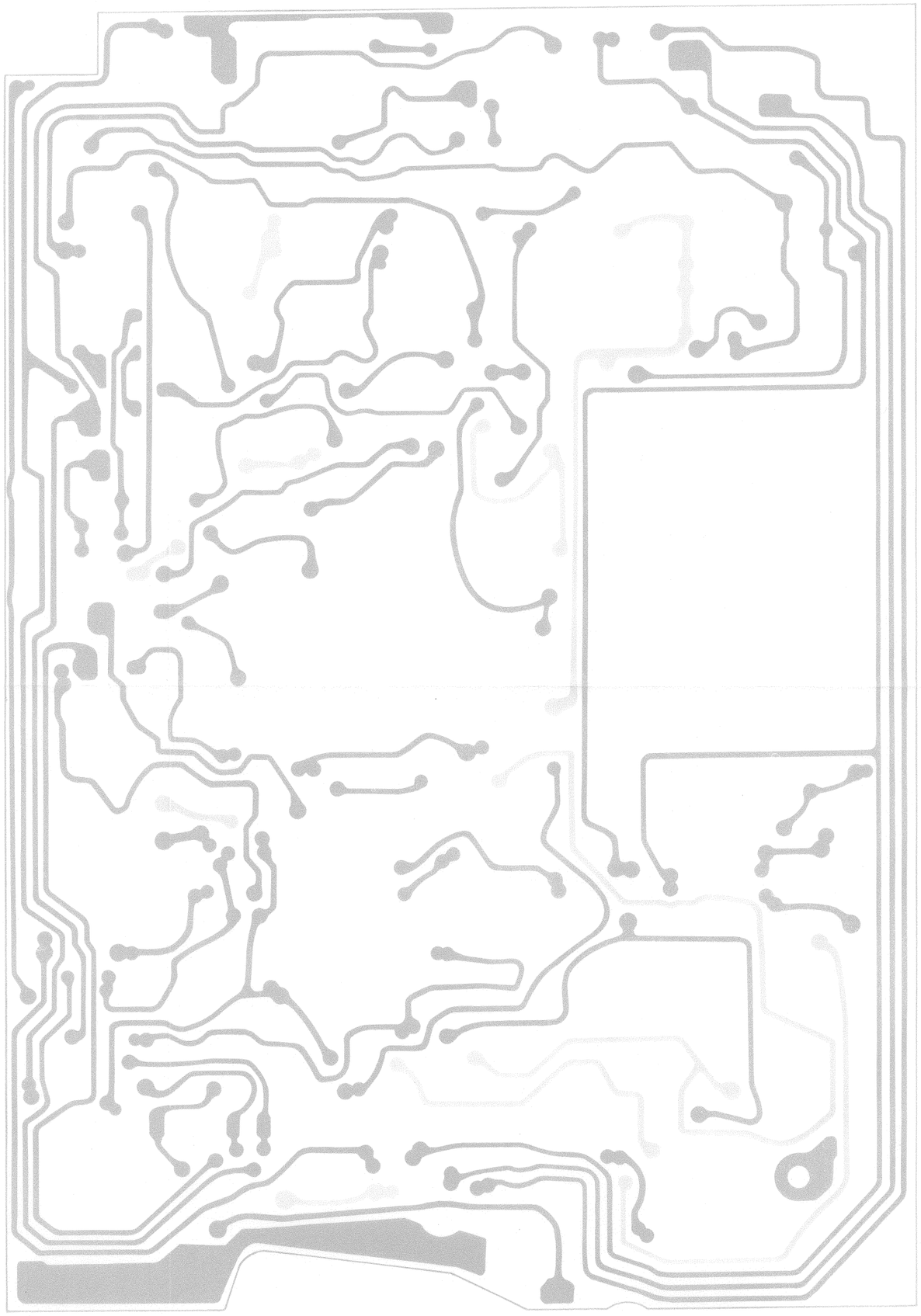


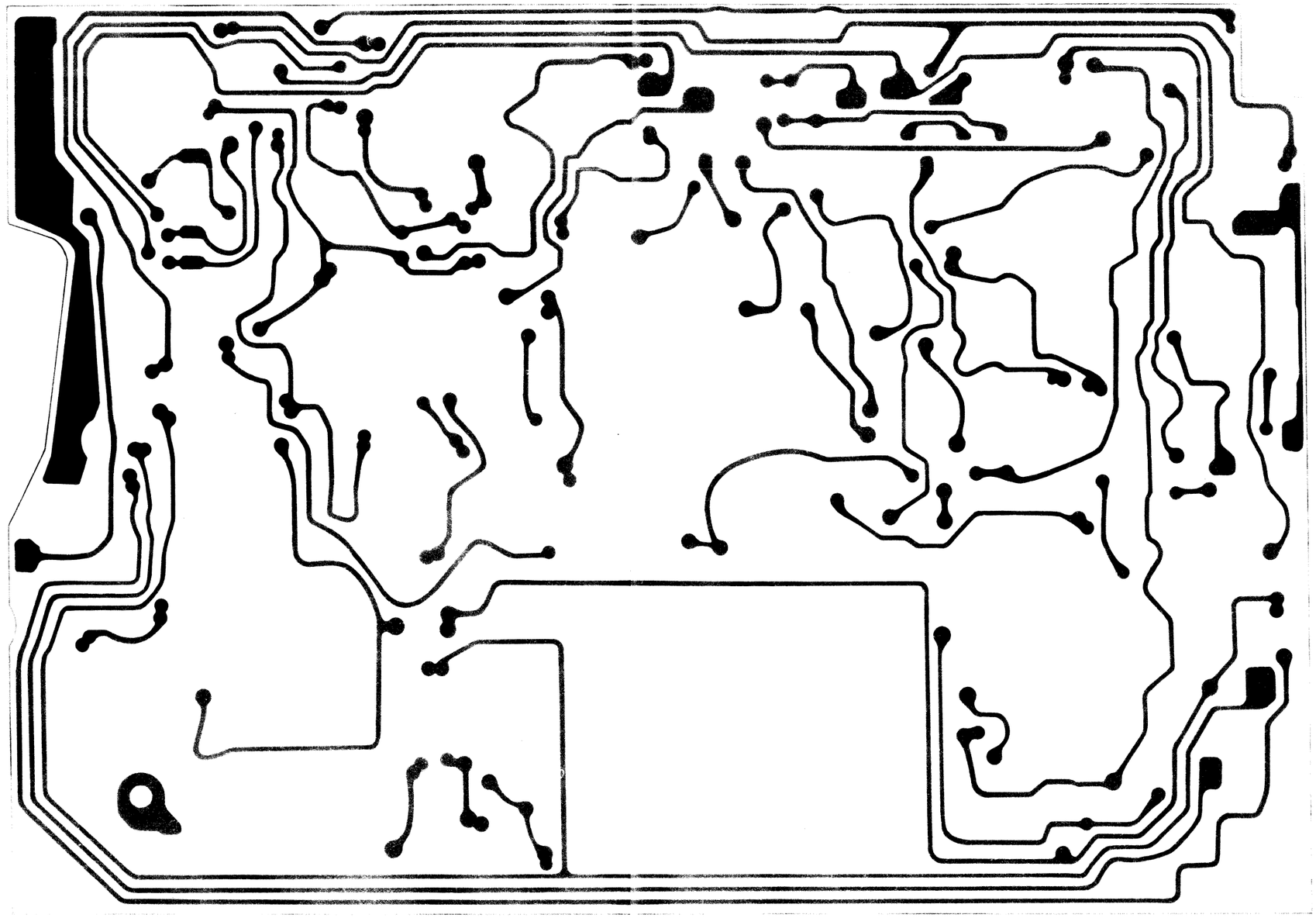
# CIRCUIT BOARD



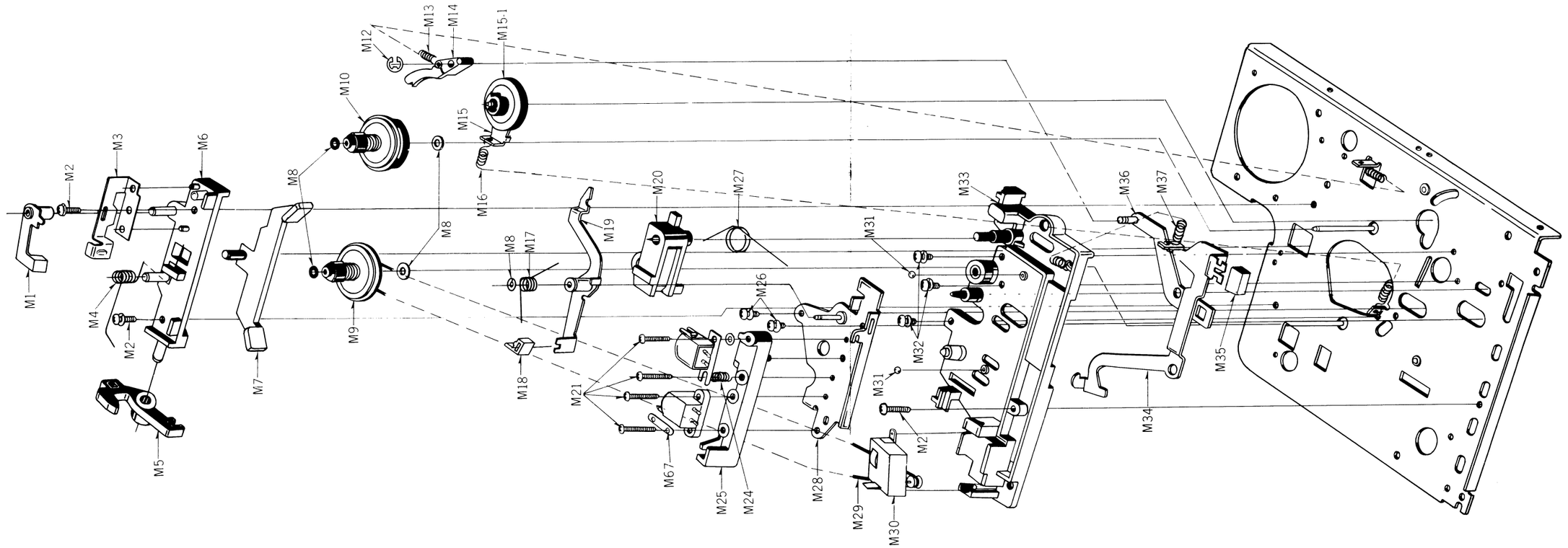

**NOTE:**

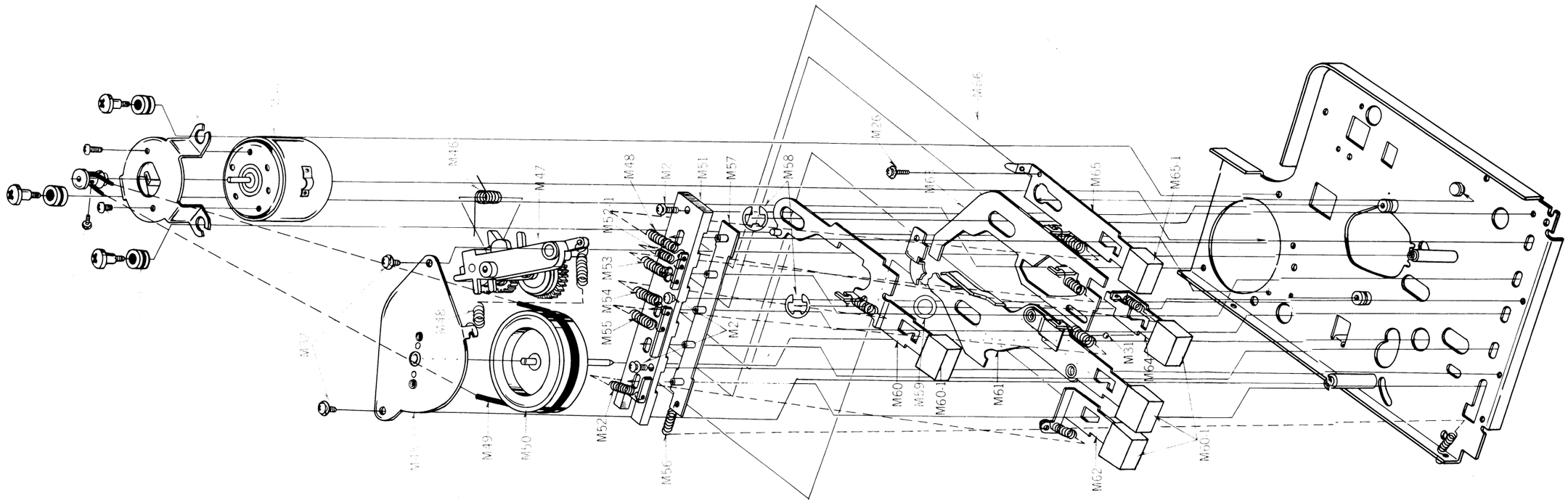
The circuit shown in green on the conductor is +B circuit.
Values indicated in ▭ are DC voltages between the chassis and electrical parts.
Numerals show values of voltage at ...
1...Recording, 2...Playback, 3...FM, and 4...MW & SW respectively.





# EXPLODED VIEWS




M45
M46
M47
M48
M2
M51
M57
M58
M36
M35
M65
M65-1
M66
M51-1
M53
M54
M55
M52
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M60
M59
M60-1
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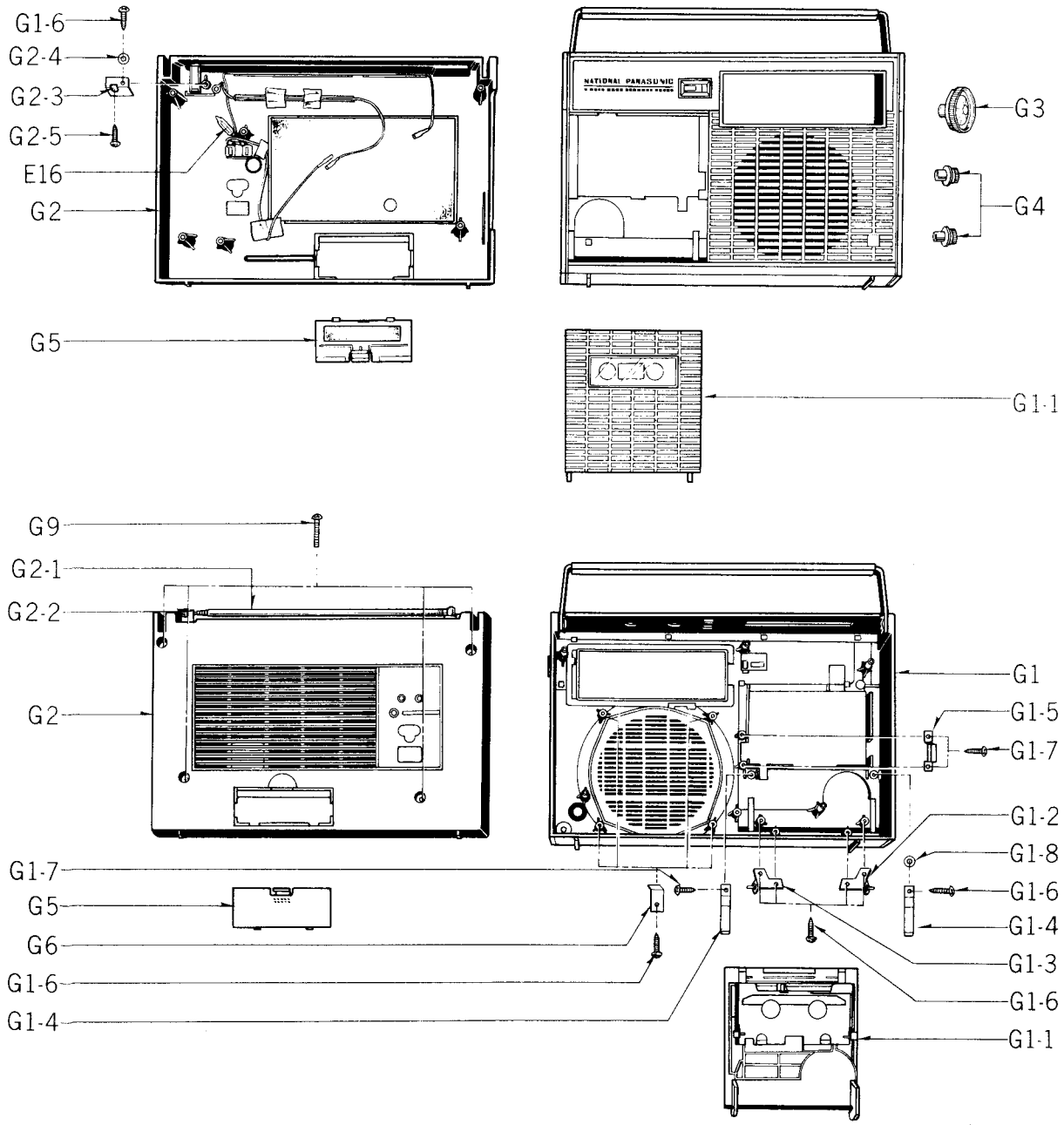
M62
M64
M31
M63-1

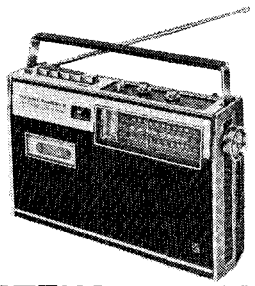
# CABINET PARTS



# REPLACEMENT PARTS LIST

## MODEL RQ-447FHS, 447FJS

## NATIONAL PANASONIC



RQ-447FHS, 447FJS

**NOTE:**

1. Be sure to make your orders of Replacement Parts according to this List.
2. "×" in "Rank" Column indicates that the part are not supplyable.
3. "**A**, **B** and **C**" in "Rank" Column indicates the recommended stock of replacement parts. Refer to the recommended stock table on last page.
4. "★" in "Remarks" Column indicates New Parts.
5. "ISO" in "Remarks" Column indicates ISO Screw or Nut.

**NOTA:**

1. Habrá que asegurarse que los pedidos de piezas de repuesto se hagan según esta lista
2. "×" marcado en la columna "Rank", quiere decir que dichas piezas no pueden ser provistas.
3. "**A**, **B** y **C**" marcadas en la columna "Rank" indican el surtido que se recomienda tener de dichas piezas de repuesto.
4. "★" marcado en la columna "Remarks", quiere decir que las piezas son nuevas.
5. "ISO" marcado en la columna "Remarks", quiere decir que es un tornillo o tuerca "ISO".

**NOTE:**

1. Bien s'assurer de se conformer à la liste suivante pour les commandes de pièces de rechange.
2. "×", dans la colonne "Rank", indique qu'il n'est pas possible de fournir ces pièces.
3. "**A**, **B** et **C**", dans la colonne "Rank", indiquent le stock recommandé de pièces de rechange. Se reporter en dernière page au tableau des stocks/recommandés.
4. "★", dans la colonne "Remarks", indique les pièces nouvelles.
5. "ISO", dans la colonne "Remarks", indique une vis ou un écrou ISO.

**HINWEIS:**

1. Bestellen Sie Ihre Ersatzteile genau nach dieser Liste.
2. Mit "×" in der "Rank" Spalte aufgeführte Teile können nicht geliefert werden.
3. "**A**, **B** und **C**" in der "Rank" Spalte zeigt Ihnen den Vorrat der Ersatzteile an.
4. "★" in der "Remarks" Spalte bedeutet "neue Teile".
5. "ISO" in der "Remarks" Spalte bedeutet ISO-Schraube oder Mutter.

**按：**

1. 關於代用零件之訂購，務請依照此表而行之爲荷。
2. 「等級」(Rank) 一欄中之 "×" 標記表示該零件無從供應。
3. 「等級」(Rank) 一欄中之 "**A**, **B**, **C**" 標記表示該零件有存貨，值得介紹。
   請參照最後一頁的「值得介紹存貨表」。
4. 「備考」(Remarks) 一欄中之 "★" 形符號標記表示該零件爲新出品。
5. 「備考」(Remarks) 一欄中之 "ISO" 符號標記表示國際標準化機構 (ISO) 式螺絲或螺母。

| Rank | Ref. No. | Description | Part No. | Pcs/ Set | Price (Per Pce.) | | Remarks |
|---|---|---|---|---|---|---|---|
| | | **MECHANICAL PARTS** | | | | | |
| C | M1 | Cassette Pressure Lever | QBJ1683A | 1 | | | RQ-237S |
| C | M2 | Sems Screw ⊕2.6×10 | XYN26+C10 | 6 | | | COMMON |
| C | M3 | Cassette Pressure Spring | QBP1302 | 1 | | | RQ-237S |
| B | M4 | Brake Spring | QBN1154 | 1 | | | " |
| C | M5 | Erase Safety Lever | QBJ1787 | 1 | | | " |
| | | | | | | | |
| C | M6 | Brake Guide | QBJ1653 | 1 | | | RQ-237S |
| B | M7 | Brake | QBJ1654 | 1 | | | " |
| C | M8 | Nylon Snap Washer | QWQ1124 | 5 | | | " |
| A | M9 | Supply Reel Table Assembly | QXP0320 | 1 | | | " |
| A | M10 | Takeup Reel Table Assembly | QXP0319 | 1 | | | " |
| | | | | | | | |
| C | M12 | Stop Ring E2.6$\phi$ | XUC26FT | 1 | | | COMMON |
| C | M13 | Auto Stop Driving Pawl Spring | QBT1489M | 1 | | | RQ-237S |
| C | M14 | Auto Stop Driving Pawl | QBJ1656 | 1 | | | " |
| A | M15 | Takeup Idler Lever Assembly | QXL0441 | 1 | | | " |
| × | M15-1 | Takeup Idler Unit | QXI0050 | 1 | | | " |
| | | | | | | | |
| B | M16 | Idler Spring | QBT1558M | 1 | | | RQ-237S |
| C | M17 | Auto Stop Detect Lever Spring | QBN1156 | 1 | | | " |
| B | M18 | Auto Stop Detecting Piece | QBJ1538 | 1 | | | RQ-222AS |
| C | M19 | Auto Stop Detecting Lever | QML1957 | 1 | | | RQ-237S |
| A | M20 | Pressure Roller Lever Assembly | QXL0450 | 1 | | | " |
| | | | | | | | |
| C | M21 | Screw ⊕M2×12 | XSN2+12 | 4 | | | COMMON |
| B | M24 | Head Spring | QBC1103 | 1 | | | RQ-209S |
| C | M25 | Head Spacer | QBJ1662 | 1 | | | RQ-237S |
| C | M26 | Sems Screw ⊕M2.6×6 | XYN26+E6 | 3 | | | COMMON |
| C | M27 | Pressure Roller Lever Spring | QBN1157 | 1 | | | RQ-237S |
| | | | | | | | |
| × | M28 | Head Base Plate Unit | QXK0051 | 1 | | | ★ |
| A | M29 | Counter Belt | QDB0142A | 1 | | | RQ-237S |
| A | M30 | Tape Counter | QDC0044 | 1 | | | " |

| Rank | Ref. No. | Description | Part No. | Pcs/ Set | Price (Per Pce.) | | Remarks |
|---|---|---|---|---|---|---|---|
| B | M31 | Steel Ball 2.5φ | QDK1012 | 3 | | | RQ-237S |
| C | M32 | Sems Screw ⊕2.6×6 | XYN26+C6 | 5 | | | COMMON |
| | | | | | | | |
| C | M33 | Upper Base Plate Unit | QXK1234 | 1 | | | RQ-237S |
| C | M34 | Cassette up Lever | QML2272 | 1 | | | ★ |
| A | M35 | Push Button (Eject) | QBJ2014A | 1 | | | RQ-238S |
| C | M36 | Auto Stop Drive Lever Unit | QXL0443 | 1 | | | RQ-237S |
| C | M37 | Eject Spring | QBT1490 | 1 | | | 〃 |
| | | | | | | | |
| B | M38 | Motor Holding Screw | QMS1833 | 3 | | | RQ-237S |
| C | M39 | Motor Cushion Rubber | QBG1055A | 3 | | | 〃 |
| B | M40 | Motor Pulley | QDP1378 | 1 | | | 〃 |
| C | M41 | Screw ⊖2×3 | XSN2-3 | 1 | | | COMMON |
| C | M42 | Screw ⊕2.6×3 | XSN26+3 | 2 | | | 〃 |
| | | | | | | | |
| × | M43 | Motor Angle | QMA1681 | 1 | | | RQ-238FHS |
| A | M44 | Motor | QDM0980 | 1 | | | 〃 |
| × | M45 | Flywheel Retainer Assembly | QXH0095 | 1 | | | RQ-237S |
| B | M46 | Gear Spring | QBN1196 | 1 | | | 〃 |
| C | M47 | Fast Forward Frame Assembly | QXL0451 | 1 | | | 〃 |
| | | | | | | | |
| B | M48 | Record Lever Spring | QBT1486M | 2 | | | RQ-237S |
| A | M49 | Flywheel Belt | QDB0141 | 1 | | | 〃 |
| A | M50 | Flywheel Assembly | QXF0063 | 1 | | | 〃 |
| C | M51 | Lever Guide | QBJ1657 | 1 | | | 〃 |
| C | M52 | Stop Lever Spring | QBT1580 | 2 | | | 〃 |
| | | | | | | | |
| C | M53 | Fast Forward Lever Spring-2 | QBT1485M | 1 | | | RQ-237S |
| C | M54 | Fast Forward Lever Spring-1 | QBT1484M | 1 | | | 〃 |
| C | M55 | Playback Lever Spring | QBT1536M | 1 | | | 〃 |
| C | M56 | Lock Plate Spring | QBT1487M | 1 | | | 〃 |
| × | M57 | Lock Plate Assembly | QXH0096 | 1 | | | 〃 |
| | | | | | | | |
| C | M58 | Stop Ring E5φ | XUC5FT | 2 | | | COMMON |
| C | M59 | Fiber Washer 6.2×11×1 | QBK7130 | 1 | | | RQ-237S |

| Rank | Ref. No. | Description | Part No. | Pcs/ Set | Price (Per Pce.) | | Remarks |
|---|---|---|---|---|---|---|---|
| B | M60 | Fast Forward Button Lever Assembly | QXL0585 | 1 | | | ★ |
| B | M60-1 | Push Button (Stop Playback FF Rewind) | QXB0128 | 4 | | | ★ |
| B | M61 | Playback Button Lever Assembly | QXL0584 | 1 | | | ★ |
| | | | | | | | |
| B | M62 | Stop Button Lever Assembly | QXL0583 | 1 | | | ★ |
| C | M63 | Fast Forward Lever-2 | QML2118 | 1 | | | RQ-237S |
| B | M64 | Rewind Button Lever Assembly | QXL0586 | 1 | | | ★ |
| B | M65 | Record Button Lever Assembly | QXL0587 | 1 | | | ★ |
| B | M65-1 | Push Button (Record) | QXB0129 | 1 | | | ★ |
| | | | | | | | |
| C | M67 | Lug Board | QTD1212 | 1 | | | ★ |
| | | **RESISTORS** | | | | | |
| B | R1, 47 | Carbon Resistor 6.8KΩ 1/4W | ERD14TJ682V | 2 | | | |
| B | R2, 31, 40, 50 | " 2.2KΩ 1/4W | ERD14TJ222V | 4 | | | |
| B | R3, 13, 66 | " 56Ω 1/4W | ERD14TJ560V | 3 | | | |
| B | R4, 27, 28, 75 | " 1KΩ 1/4W | ERD14TJ102V | 4 | | | |
| B | R5 | " 1.5KΩ 1/4W | ERD14TJ152V | 1 | | | |
| | | | | | | | |
| B | R6, 43 | Carbon Resistor 3.3KΩ 1/4W | ERD14TJ332V | 2 | | | |
| B | R7, 53 | " 150Ω 1/4W | ERD14TJ151V | 2 | | | |
| B | R8, 52, 55, 56 | " 10KΩ 1/4W | ERD14TJ103V | 4 | | | |
| B | R9, 17, 21, 23, 65 | " 100Ω 1/4W | ERD14TJ101V | 5 | | | |
| B | R10, 38 | " 680Ω 1/4W | ERD14TJ681V | 2 | | | |
| | | | | | | | |
| B | R11 | Carbon Resistor 18Ω 1/4W | ERD14TJ180V | 1 | | | |
| B | R12 | " 4.7Ω 1/4W | ERD14TJ4R7V | 1 | | | (RQ-447FHS Only) |
| B | R12 | " 8.2Ω 1/4W | ERD14TJ8R2V | 1 | | | (RQ-447FJS Only) |
| B | R14 | " 47Ω 1/4W | ERD14TJ470V | 1 | | | |
| B | R15, 16, 42 | " 100KΩ 1/4W | ERD14TJ104V | 3 | | | |
| | | | | | | | |
| B | R18, 41, 51 | Carbon Resistor 560Ω 1/4W | ERD14TJ561V | 3 | | | |
| B | R19, 60, 76 | " 390Ω 1/4W | ERD14TJ391V | 3 | | | |
| B | R20, 22 | " 180Ω 1/4W | ERD14TJ181V | 2 | | | |
| B | R24 | " 1.8KΩ 1/4W | ERD14TJ182V | 1 | | | |

| Rank | Ref. No. | Description | Part No. | Pcs/ Set | Price (Per Pce.) | | Remarks |
|---|---|---|---|---|---|---|---|
| B | R25, 44 | Carbon Resistor 470Ω 1/4 W | ERD14TJ471V | 2 | | | |
| | | | | | | | |
| B | R26 | Carbon Resistor 270Ω 1/4 W | ERD14TJ271V | 1 | | | |
| B | R29, 58 | " 2.7KΩ 1/4 W | ERD14TJ272V | 2 | | | |
| B | R30, 49 | " 15KΩ 1/4 W | ERD14TJ153V | 2 | | | |
| B | R32 | " 1.2KΩ 1/4 W | ERD14TJ122V | 1 | | | |
| B | R33 | " 220KΩ 1/4 W | ERD14TJ224V | 1 | | | |
| | | | | | | | |
| B | R34, 61, 68 | Carbon Resistor 4.7KΩ 1/4 W | ERD14TJ472V | 3 | | | |
| B | R35, 46, 69 | " 5.6KΩ 1/4 W | ERD14TJ562V | 3 | | | |
| B | R36, 45 | " 68KΩ 1/4 W | ERD14TJ683V | 1 | | | |
| B | R37 | " 18KΩ 1/4 W | ERD14TJ183V | 1 | | | |
| B | R48 | " 27KΩ 1/4 W | ERD14TJ273V | 1 | | | |
| | | | | | | | |
| B | R54 | Carbon Resistor 120Ω 1/4 W | ERD14TJ121V | 1 | | | |
| B | R57 | " 220Ω 1/4 W | ERD14TJ221V | 1 | | | |
| B | R59, 64 | " 8.2KΩ 1/4 W | ERD14TJ822V | 2 | | | |
| B | R62 | " 3.9KΩ 1/4 W | ERD14TJ392V | 1 | | | |
| B | R63 | " 330KΩ 1/4 W | ERD14TJ334V | 1 | | | |
| | | | | | | | |
| B | R67 | Wire-wound Resistor 0.47Ω 1/2 W | ERM12PKR47 | 1 | | | |
| B | R70 | Carbon Resistor 24KΩ 1/4 W | ERD14TJ243V | 1 | | | |
| B | R71 | " 120KΩ 1/4 W | ERD14TJ124V | 1 | | | |
| B | R77 | " 3.9Ω 1/4 W | ERD14TJ3R9V | 1 | | | |
| B | R78 | Solid Resistor 22Ω 1/2 W | ERC12GM220 | 1 | | | |
| | | | | | | | |
| B | R79 | Carbon Resistor 820KΩ 1/4 W | ERD14TJ824V | 1 | | | |
| | | **VARIABLE RESISTORS** | | | | | |
| A | VR1 | Variable Resistor 5KΩ (D) | EVCS0AL20D53 | 1 | | | RQ-23S |
| A | VR2 | Variable Resistor 10KΩ (A) | EVCS0AL20A14 | 1 | | | " |
| A | VR3 | Semi-fixed Variable Resistor 50KΩ (B) | EVLT0AA00B54 | 1 | | | RQ-23S<br>RS-25S |
| A | VR4 | Wire-wound Variable Resistor 80Ω | EVW68A600B81 | 1 | | | RQ-23FHS |
| | | | | | | | |
| | | | | | | | |

| Rank | Ref. No. | Description | Part No. | Pcs/ Set | Price (Per Pce.) | | Remarks |
|---|---|---|---|---|---|---|---|
| | | **CAPACITORS** | | | | | |
| C | C1, 50 | Ceramic Capacitor 3 pF | ECCD1H030C | 2 | | | |
| C | C3 | " 33 pF | ECCD1H330KC | 1 | | | |
| C | C4, 19 | " 10 pF | ECCD1H100KC | 2 | | | |
| C | C5, 17 | " 18 pF | ECCD1H180KC | 2 | | | |
| C | C6 | " 22 pF | ECCD1H220KC | 1 | | | |
| | | | | | | | |
| C | C7, 54, 55 | Ceramic Capacitor 0.001μF | ECKE1H102P | 3 | | | |
| B | C8,10,15,16, 28,30,35,36 | Variable Capacitor | PVC22J20T2M | 1 | | | (RQ-238FHS) |
| B | C11, 32 | Trimmer Capacitor | ECV2RW12W52Z | 1 | | | ( " ) |
| C | C12, 13, 22, 23, 39, 40, 46, 47, 106, 107, 108, 109, 110, 111, 112 | | | | | | |
| | | Ceramic Capacitor 0.01μF | ECKE1H103P | 15 | | | |
| B | C14,84,86,92 | Electrolytic Capacitor 50 V 1μF | ECEA50V1L | 1 | | | |
| | | | | | | | |
| C | C18, 45 | Ceramic Capacitor 4 pF | ECCD1H040C | 2 | | | |
| C | C20, 51 | Mica Capacitor 47 pF | ECMS05470KH | 2 | | | |
| C | C21, 52, 87 | Ceramic Capacitor 330 pF | ECCD1H331K | 3 | | | |
| C | C25,26,34,96 | " 0.01μF | ECKE1H103MD | 4 | | | |
| C | C27, 29 | " 5 pF | ECCD1H050C | 2 | | | |
| | | | | | | | |
| C | C31 | Styrol Capacitor 300 pF | ECQS1301JZ | 1 | | | |
| C | C33 | " 3300 pF | ECQS1332KZ | 1 | | | |
| C | C37, 38 | Ceramic Capacitor 7 pF | ECCD1H070DC | 2 | | | |
| C | C41 | Styrol Capacitor 1500 pF | ECQS1152KZ | 1 | | | |
| C | C42, 44, 56 | Ceramic Capacitor 0.022μF | ECKE1H223P | 3 | | | |
| | | | | | | | |
| B | C43, 95 | Electrolytic Capacitor 16 V 10μF | ECEA16V10L | 2 | | | |
| C | C49 | Ceramic Capacitor 0.033μF | ECKE1H333P | 1 | | | |
| B | C53 | Electrolytic Capacitor 25 V 4.7μF | ECEB25V4R7L | 1 | | | |
| B | C57 | " 6 V 47μF | ECEA6V47L | 1 | | | |
| C | C58, 69 | Mylar Capacitor 0.027μF | ECQM05273KZB | 2 | | | |
| | | | | | | | |
| B | C59,70,71,72, 74,75 | Electrolytic Capacitor 25 V 3.3μF | ECEA25V3R3L | 5 | | | |
| B | C60, 94 | " 10 V 1000μF | ECEA10V1000L | 2 | | | |

| Rank | Ref. No. | Description | Part No. | Pcs/ Set | Price (Per Pce.) | | Remarks |
|---|---|---|---|---|---|---|---|
| B | C61, 80, 81 | Electrolytic Capacitor 25 V 0.22μF | ECEA25VR22M | 3 | | | |
| C | C63 | Mylar Capacitor 0.0012μF | ECQM05122MZB | 1 | | | |
| B | C64, 101 | Electrolytic Capacitor 10 V 470μF | ECEA10V470L | 2 | | | |
| | | | | | | | |
| B | C65 | Electrolytic Capacitor 50 V 0.47μF | ECEA50VR47LM | 1 | | | |
| C | C66 | Ceramic Capacitor 0.001μF | ECKE1H102MD | 1 | | | |
| C | C67 | Mylar Capacitor 0.0033μF | ECQM05332MZB | 1 | | | |
| C | C68, 76, 98 | " 0.001μF | ECQM05102MZB | 3 | | | |
| C | C73 | " 0.012μF | ECQM05123MZB | 1 | | | |
| | | | | | | | |
| C | C77 | Mylar Capacitor 0.0039μF | ECQM05392KZB | 1 | | | |
| C | C78 | " 0.033μF | ECQM05333MZB | 1 | | | |
| B | C79, 91 | Electrolytic Capacitor 6 V 33μF | ECEA6V33L | 2 | | | |
| B | C82 | " 25 V 4.7μF | ECEA25V4R7L | 1 | | | |
| C | C83 | Mylar Capacitor 0.01μF | ECQM05103MZB | 1 | | | |
| | | | | | | | |
| C | C85 | Mylar Capacitor 0.056μF | ECQM05563MZB | 1 | | | |
| C | C88 | " 0.082μF | ECQM05823MZB | 1 | | | |
| C | C89, 100, 113 | " 0.1μF | ECQM05104MZB | 3 | | | |
| C | C90 | Aluminum Capacitor 25 V 0.1μF | ECAG25ER1 | 1 | | | |
| C | C93 | Styrol Capacitor 560 pF | ECQS1561KZ | 1 | | | |
| | | | | | | | |
| C | C99 | Mylar Capacitor 0.018μF | ECQM05183MZB | 1 | | | |
| B | C102 | Electrolytic Capacitor 16 V 100μF | ECEA16V100L | 1 | | | |
| C | C103 | Mylar Capacitor 0.0018μF | ECQM05182MZB | 1 | | | |
| B | C104 | Electrolytic Capacitor 16 V 220μF | ECEA16V220L | 1 | | | |
| B | C105 | " 16 V 1000μF | ECEA16V1000L | 1 | | | |
| | | | | | | | |
| C | C114 | Mylar Capacitor 0.0056μF | ECQM05562KZB | 1 | | | |
| C | C115 | Ceramic Capacitor 3 pF | ECCD1H030C | 1 | | | (RQ-447F JS Only) |
| | | **TRANSISTORS** | | | | | |
| A | Tr1 | Transistor | 2SC921 | 1 | | | RQ-338F HS |
| A | Tr2, 3, 4, 5 | " | 2SC920 | 4 | | | RQ-337S |
| A | Tr6 | " | 2SB324 | 1 | | | COMMON |

| Rank | Ref. No. | Description | Part No. | Pcs/ Set | Price (Per Pce.) | | Remarks |
|---|---|---|---|---|---|---|---|
| | | **INTEGRATED PART** | | | | | |
| A | IC1 | Integrated Circuit | M5115P | 1 | | | RQ-237S |
| | | **DIODES & RECTIFIER** | | | | | |
| A | D1, 3, 7, 8, 11 | Diode | OA90Z | 5 | | | COMMON |
| A | D2 | Diode (Varicap) | 1S351 | 1 | | | RQ-238FHS |
| A | D4 | Diode (Varistor) | EYV320D1R2J3 | 1 | | | " |
| A | D5, 6 | Diode | 2OA90 | 2 | | | COMMON |
| A | D9, 12 | Silicon Diode | 1S1211 | 2 | | | RQ-235S, 237S |
| | | | | | | | |
| A | D10 | Diode | OA90ZA | 1 | | | COMMON |
| A | D13 | Silicon Rectifier | 10DC1 | 1 | | | ★ |
| | | **TRANSFORMERS** | | | | | |
| A | T1 | IFT (FM) | RLI4B152 | 1 | | | RQ-237S, RS-253S, 267S |
| A | T2, 5 | IFT2, IFT5 (FM) | RLI4B351 | 2 | | | RQ-237S, 435S |
| A | T3 | IFT3 (SW, MW) | RLI2B152 | 1 | | | RQ-237S, RS-253S, 280S |
| A | T4 | IFT4 (SW, MW) | RLI2B257 | 1 | | | RQ-237S, RS-267S |
| A | T6 | IFT6 (FM) | RLI4B551 | 1 | | | " |
| | | | | | | | |
| A | T7 | IFT7 (FM) | RLI4B552 | 1 | | | RQ-237S, RS-267S |
| A | T8 | IFT8 (SW, MW) | RLI2B450M | 1 | | | RQ-238FHS |
| A | T9 | Output Transformer | QLA0374 | 1 | | | ★ |
| A | T10 | Power Transformer | QLP0564A | 1 | | | ★ |
| | | **COILS** | | | | | |
| B | L1, 5 | RF Coil | RLQ75S5 | 2 | | | RQ-237S, RS-267S |
| B | L2, 3 | " | RLQ10S5 | 2 | | | RS-267S |
| B | L4 | FM Detection Coil | RLD4N5 | 1 | | | ★ |
| B | L6 | FM Oscillator Coil | RLO4Y53 | 1 | | | RQ-238FHS |
| B | L7, 8 | SW, MW Antenna Coil | ELR15B5001 | 1 | | | ★ (RQ-447FHS Only) |
| | | | | | | | |
| B | L7, 8 | SW, MW Antenna Coil | ELR15B5002 | 1 | | | ★ (RQ-447FJS Only) |
| B | L10 | MW Oscillator Coil | RLO2B59M | 1 | | | RQ-238FHS |

| Rank | Ref. No. | Description | Part No. | Pcs/ Set | Price (Per Pce.) | | Remarks |
|---|---|---|---|---|---|---|---|
| B | L11 | SW Oscillator Coil | RLO3B11M | 1 | | | RQ-238FHS (RQ-447FHS Only) |
| B | L11 | " | RLO3B18M | 1 | | | RQ-238FJS (RQ-447FJS Only) |
| A | L13 | Oscillator Coil | QLB0145 | 1 | | | RQ-237S, RS-253S |
| | | | | | | | |
| A | L14 | Choke Coil | QLP0122 | 1 | | | RQ-237S |
| B | L15 | 19 kHz Filter Coil | QLH2013 | 1 | | | RQ-238FHS, RS-282S |
| B | L16 | RF Coil | RLQ75S5 | 1 | | | RQ-237S, RS-267S |
| | | **SWITCHES** | | | | | |
| A | S1 | Slide Switch (Band Selector) | QSS1149 | 1 | | | ★ |
| A | S2 | Slide Switch (Record/Playback Selector) | QSS1148 | 1 | | | ★ |
| A | S3 | Slide Switch (Function) | QSS1150 | 1 | | | ★ |
| A | S4 | Slide Switch (AGC) | QSS1151 | 1 | | | ★ |
| A | S6 | Leaf Switch (Power) | QSB0170A | 1 | | | RQ-237S, RS-257 1S |
| | | | | | | | |
| | S7 | AC/DC Select Switch with AC Socket | (Ref E6) | (1) | | | |
| A | S8 | Rotary Switch (AC Voltage Selector) | QSR0004B | 1 | | | COMMON |
| | | **ELECTRICAL PARTS** | | | | | |
| A | E1 | Record/Playback Head | QWY0107Z | 1 | | | RQ-22 S, 237S |
| A | E2 | Erase Head | QWY2107 | 1 | | | RQ-238FHS |
| C | E3 | Battery Terminal | QJB0047 | 2 | | | COMMON |
| C | E4 | Battery Spring | QJB0004 | 2 | | | " |
| A | E5 | Speaker | EAS12P70SF | 1 | | | ★ |
| | | | | | | | |
| B | E6 | AC Socket | QJS0316S | 1 | | | RQ-238FHS (ISO) |
| B | E7 | M3 Jack | QJA0125 | 3 | | | RQ-237S |
| B | E8 | M2 Jack | QJA0126 | 1 | | | " |
| B | E9 | M3 Jack with SW | QJA0127 | 1 | | | " |
| B | E10 | DC Jack | QJA0128 | 1 | | | " |
| | | | | | | | |
| C | E11 | Jack Board | QGJ1208 | 1 | | | ★ |
| B | E12 | Tuning Shaft Assembly | QMS1931 | 1 | | | RQ-237S |
| C | E13 | Dial Dram | QDQ1026 | 1 | | | ★ |
| C | E14 | Dial Spring | QBT1320 | 1 | | | RS-267S |

| Rank | Ref. No. | Description | Part No. | Pcs/ Set | Price (Per Pce.) | | Remarks |
|---|---|---|---|---|---|---|---|
| C | E15 | Dial Indicator | QKT1632 | 1 | | | ★ |
| | | | | | | | |
| A | E16 | Neon Lamp | XAN3K | 1 | | | RQ-235S, 238FHS |
| A | E17 | Condenser Microphone | WM089CZ | 1 | | | RQ-237S |
| A | E18 | VU Meter | QSL1008 | 1 | | | ★ |
| C | E19 | Dial Scale | QGK2146 | 1 | | | ★ (RQ-447FJS Only) |
| C | E19 | " | QGK2147 | 1 | | | ★ (RQ-447FHS Only) |
| | | | | | | | |
| C | E20 | Amplifier Chassis | QTC1141 | 1 | | | ★ |
| | | **CABINET PARTS** | | | | | |
| B | G1 | Body Case Assembly (Without Speaker) | QYB0306S | 1 | | | ★ ISO |
| B | G1-1 | Cassette Case Assembly | QYA0152 | 1 | | | ★ |
| C | G1-2 | Cassette Case Retainer A Unit | QYQ0201 | 1 | | | ★ |
| C | G1-3 | Cassette Case Retainer B Unit | QYQ0202 | 1 | | | ★ |
| C | G1-4 | Cassette Lid Spring | QBP1409 | 2 | | | ★ |
| | | | | | | | |
| C | G1-5 | Lid Holding Metal | QKT1498 | 1 | | | RQ-237S |
| C | G1-6 | Tapping Screw ⊕PH3×8 | XTN3+8B | 10 | | | COMMON |
| C | G1-7 | Tapping Screw ⊕PH3×6 | XTN3+6BK | 3 | | | " |
| C | G1-8 | Poly Washer | QBJ3292 | 1 | | | |
| B | G2 | Bottom Case Assembly | QYC0142S | 1 | | | ★ ISO |
| | | | | | | | |
| C | G2-1 | Rod Antenna | XEAQCS218FAS | 1 | | | ★ ISO |
| B | G2-2 | Rod Antenna Retainer | QBJ1997 | 1 | | | ★ |
| C | G2-3 | Rod Antenna Holding Metal | QKT1630 | 1 | | | ★ |
| C | G2-4 | Rod Antenna Washer | XWG3 | 1 | | | COMMON |
| C | G2-5 | Screw | XSN3+6S | 1 | | | " ISO |
| | | | | | | | |
| B | G3 | Tunning Knob | QGT1154 | 1 | | | ★ |
| B | G4 | Knob Assembly | QYT0250 | 2 | | | ★ |
| B | G5 | Battery Cover Assembly | QYF0101 | 1 | | | ★ |
| C | G6 | Speaker Metal | QKT1593 | 4 | | | ★ |
| B | G7 | Selector Knob Assembly | QYT0243 | 2 | | | ★ |
| | | | | | | | |

| Rank | Ref. No. | Description | Part No. | Pcs/ Set | Price (Per Pce.) | | Remarks |
|---|---|---|---|---|---|---|---|
| A | G8 | Volume Knob | QGT2118 | 1 | | | ★ |
| C | G9 | Screw ⊕PH3×35 | XSN3+35FZS | 4 | | | COMMON ISO |
| | | **ACCESSORIES** | | | | | |
| A | A1 | Cassette Tape (Demonstration) | QFT1TCCNRJZ | 1 | | | COMMON |
| A | A2 | Earphone | EAE2SB1 | 1 | | | " |
| A | A3 | AC Plug Adaptor | QJP0603S | 1 | | | " ISO |
| B | A4 | AC Power Cord with Cap | QFC1065 | 1 | | | RQ-238FHS |
| B | A5 | Instruction Book | QQT1693 | 1 | | | ★ |
| | | **PACKINGS** | | | | | |
| C | P1 | Inside Carton | QPN2691 | 1 | | | ★ (RQ-447FJS Only) |
| C | P1 | " | QPN2692 | (1) | | | ★ (RQ-447FHS Only) |
| C | P2 | Inner Cushion-A | QPN2622 | 1 | | | ★ |
| C | P3 | Inner Cushion-B | QPN2623 | 1 | | | ★ |
| C | P4 | Dust Cover | XZB36X46A05 | 1 | | | COMMON |
| | | | | | | | |
| C | P5 | Accessory Box | QPW1122 | 1 | | | RQ-208S |

## RECOMMENDED STOCK OF REPLACEMENT PARTS

| Rank of Part | Estimated Selling Q'ty of Tape Recorder Set | | | | | |
|---|---|---|---|---|---|---|
| | Less than 50 | 100 | 300 | 500 | 1,000 | 2,000 |
| **A** rank Parts | 2 | 5 | 15 | 20 | 40 | 80 |
| **B** rank Parts | 1 | 2 | 5 | 10 | 20 | 40 |
| **C** rank Parts | 0 | 1 | 3 | 5 | 10 | 20 |